

**Remarks**

Claims 1-12 and 15-16 are under consideration, claims 15 and 16 having been added. Claims 1, 5 and 10-12 have been amended. Reconsideration is requested. The Examiner is thanked for courtesies extended in granting a telephone interview prior to Applicant's receipt of the above-identified office action. During the interview, a prospective amendment to the claims, adding additional structural features in place of or in addition to recitation of "over-sized" through hole apertures was discussed. The present response presents such amendment for the Examiner's consideration.

The claims of the application are rejected under 35 U.S.C. 102(b) and/or under 35 U.S.C. 103(a), citing Justman, U.S. Patent No. 4,280,742 as the sole or the primary reference. As will be set out in greater detail below, Applicant believes the present invention, as now claimed, patentably distinguishes over Justman '742, taken either alone or in combination with other references such as Jones, U.S. Patent No. 2,189,040. FIG. 2 shows an example of the arrangement now claimed by the applicant. Included is a mounting box 12 located below a cutter 22 and having threaded fasteners disposed on either side of the (vertical centerline) axis of the cutter. These features are combined with an engagement structure that includes a channel 17 that receives projection 18 of the cutting tool (see Fig. 3) and dowels 16, which are straddled on either side by the threaded fasteners 19, all of which are located to one side of (i.e. below) the cutter 22. As a result of this arrangement, the cutter applies a combination of side loads, torque and cantilever forces to the threaded fasteners 19, giving rise to a jamming problem that proved exceedingly difficult to overcome during practical drilling operations in the field. Claimed in combination with this arrangement is a recitation that the through holes defined by portions of said arm provide clearance between the arm and the threaded fasteners so that the threaded fasteners are substantially disengaged from loading applied through the arm to at least one of said dowel and said engagement features.

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In part, claim 1 now recites

an attachment-device for a ground drilling or cutting tool that enables cutting elements to be movably secured to said tool, said cutting elements having an arm that has a longitudinal axis,

a dowel that locates in first and said second dowel holes when the dowel holes are aligned with one another;

said tool and said cutting element having engagement features that include a projection received in a channel so as to cooperate with one another to resist side loads applied to said cutting element,

threaded apertures defined in said second surface of said tool, on either side of said engagement features and to one side of said cutter, that are threadingly engaged by said threaded fasteners,

portions of said arm disposed on either side of said cutting element, defining through holes extending through said arm, to receive and locate said threaded fasteners for threading engagement with said tool; and

said through holes defined by said portions of said arm providing clearance between the wall and said threaded fasteners so that said threaded fasteners are substantially disengaged from loading applied through said arm to at least one of said dowel and said engagement features.

In addition, claim 15 recites that the engagement features cooperate with the dowels to resist side loads applied to said cutting element, and claim 16 recites that the arm is disposed below said cutter. It is respectfully submitted that the claims now present in the application clearly distinguish over the prior art, and that the application is in a condition for allowance.

Applicant's claimed arrangement provides the advantageous operation described in page 5, lines 16 through 20, wherein drilling forces longitudinal to the drilling tool 10 are transmitted as shear forces primarily to the dowels 16. The clearance between the

threaded fasteners 19 and the apertures 20 minimize shear loading applied to the threaded fasteners 19. As the drilling tool rotates, side forces applied normal to the longitudinal axis of the drilling tool are resisted by the engagement of the elongate projection 18 within the channel 17.

Claims 1 and 5-12 are rejected under 35 U.S.C. 102(b) as anticipated by Justman '742. Applicant's claimed features set out in claim 1 are neither shown nor suggested in Justman '742, which is directed to the relationship of dowel pin-nuts 47 disposed in sockets 43, 45, for a 90 degree rotation, as set out in column 4, lines 8 through 21 of Justman '742. The loose fit of Justman '742 is limited to this 90 degree rotation needed for assembly of Justman '742 to bring lugs on the nuts 47 into engagement with retaining flanges so as to hold the radial dowel pin against radial outward movement. Nowhere does Justman '742 mention details of the engagement, let alone an arrangement in which cooperating engagement features (e.g. a projection of a mounting box 12 and a recess formed in the tool, as shown for example in Fig. 2) to resist side loads applied to said cutting element, with threaded apertures defined in said tool on either side of said dowel holes and said engagement features, with through holes defined by an arm, disposed to one side (e.g. below) of said cutter, and with the through holes providing clearance between the arm and said threaded fasteners so that said threaded fasteners are substantially disengaged from loading applied through said arm to at least one of said dowel and said engagement features.

Therefore, in light of the above remarks, Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of claims 1 and 5-12 under 35 U.S.C. 102(b). The rejection is believed to have been fully overcome.

Claims 2-4 are rejected under 35 U.S.C. 103(a) over a combination of Justman '742 in view of Jones '040. Jones is cited for an attachment device of a conical roller cutter used in a cutting tool. However, Jones '040 does nothing to cure the deficiencies of Justman '742. In Jones '040, cutting elements are supported by a shaft 8 having supporting blocks 9 and 10 at its opposite ends. The threaded ends 18 and 19 of shaft 8 engage nuts 20, 21 threaded onto the ends of the shaft. No details concerning the threaded engagement, let alone


Serial No. 10/542,738 ----- 8  
Filed: May 22, 2006

the clearance called for in applicant's claimed invention, are shown or suggested in Jones '040, and thus the deficiencies of Justman '742 described above are not cured by combination with Jones '040. Accordingly, the rejection of claims 2-4 under 35 U.S.C. 103(a) is also believed to have been fully overcome.

In light of the above amendment and remarks, all of the claims now pending in this application are believed to be allowable, and an early allowance is respectfully requested.

Respectfully submitted,

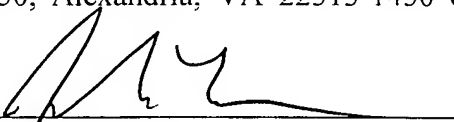
OLSON & CEPURITIS, LTD.

By   
Joseph M. Kuo

OLSON & CEPURITIS, LTD.  
20 North Wacker Drive  
36<sup>th</sup> Floor  
Chicago, IL 60606  
(312) 580-1180 Phone  
(312) 580-1189 Fax

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Joseph M. Kuo